UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,446	03/04/2004	CHIH-HSIANG YANG	11584-US-PA	2445

31561 7590 07/11/2008

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER	
PIZIALI, JEFFREY J	
ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
07/11/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USA@JCIPGROUP.COM.TW
Belinda@JCIPGROUP.COM.TW

Office Action Summary	Application No.	Applicant(s)	
	10/708,446	YANG, CHIH-HSIANG	
	Examiner	Art Unit	
	Jeff Piziali	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 March 2008 and 11 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☒ Claim(s) *1* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the figures.

Specification

3. The abstract of the disclosure is objected to because:

The term "***differential signal transmitter***" should be corrected, for example to, "***differential signal transmitters***" (see Line 4 of the abstract).

Correction is required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities:

The phrase "***Referring FIG. 1***" should be corrected, for example to, "***Referring to FIG. 1***" (see Page 2, Paragraph 6, Line 1 of the specification).

Appropriate correction is required.

5. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

6. Claim 1 is objected to because of the following informalities:

The term "***a LCD***" should be corrected, for example to, "***an LCD***" (see Line 4 of the claim).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1 and 3 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 recites the subject matter: "***a signal amplifier, which converts and amplifies the differential signal***" (in line 12).

It would be unclear to one having ordinary skill in the art how, why, and in what way "***the differential signal***" is intended to be "***converted***" by the "***signal amplifier***".

The claim contains "***conversion***" subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 3 recites the subject matter: "***a signal amplifier, which converts and partially amplifies the differential signal***" (in line 2).

It would be unclear to one having ordinary skill in the art how, why, and in what way "***the differential signal***" is intended to be "***converted***" by the "***signal amplifier***".

The claim contains "***conversion***" subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

9. The remaining claims are rejected under 35 U.S.C. 112, first paragraph, as being dependent upon rejected base claims.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***a cascade liquid crystal display (LCD)***" (in line 1).

It would be unclear to one having ordinary skill in the art whether the acronym "***LCD***" is intended to represent "***a cascade liquid crystal display***"; or rather whether the acronym "***LCD***" is intended to represent "***a liquid crystal display***".

An omitted structural cooperative relationship results from the claimed subject matter: "***a cascade liquid crystal display (LCD)***" (in line 1) and "***a LCD***" (in line 4).

It would be unclear to one having ordinary skill in the art whether a single, identical "***LCD***" is intended to be claimed; or rather whether plural, distinct, different, and independent "***LCDs***" are intended to be claimed.

An omitted structural cooperative relationship results from the claimed subject matter: "***a plurality of driving circuit units***" (in line 3) and "***the driving circuit unit***" (in line 6).

It would be unclear to one having ordinary skill in the art whether the singular "***driving circuit unit***" is a common element of the earlier claimed "***plurality of driving circuit units***"; or rather whether the singular "***driving circuit unit***" is distinct, different, and independent from the earlier claimed "***plurality of driving circuit units***".

An omitted structural cooperative relationship results from the claimed subject matter: "***a plurality of differential transmitters***" (in line 5) and "***the differential signal transmitter***" (in line 11).

It would be unclear to one having ordinary skill in the art whether the singular "***differential signal transmitter***" is a common element of the earlier claimed "***plurality of differential transmitters***"; or rather whether the singular "***differential signal transmitter***" is distinct, different, and independent from the earlier claimed "***plurality of differential transmitters***".

An omitted structural cooperative relationship results from the claimed subject matter: "***a plurality of differential transmitters, for generating a differential signal and transmitting the differential signal***" (in line 5) and "***the differential signal is transmitted from the differential signal transmitter***" (in line 13).

It would be unclear to one having ordinary skill in the art whether a single, identical "***differential signal***" is intended to be claimed; or rather whether plural, distinct, different, and independent "***differential signals***" are intended to be claimed.

An omitted structural cooperative relationship results from the claimed subject matter: "***a next stage***" (in line 6) and "***a previous stage***" (in line 10).

It would be unclear to one having ordinary skill in the art what relationship, if any, is intended to exist between these two limitations. "***A next stage***" after what? "***A previous stage***" before what?

13. Claim 1 recites the limitation "***fashion***" (in line 3). The addition of the word "***fashion***" to an otherwise definite expression extends the scope of the expression so as to render it indefinite. Ex parte Copenhaver, 109 USPQ 118 (Bd. App. 1955). It would be unclear to one having ordinary skill in the art what "***fashion***" is intended to convey. See MPEP 2173.05(b).

14. Claim 1 recites the limitation "***a next stage***" (in line 6). There is insufficient antecedent basis for this limitation in the claim. It would be unclear to one having ordinary skill in the art how "***a next stage***" can exist without any antecedent basis for "***stages***". "***A next stage***" after what?

15. Claim 1 recites the limitation "***the driving circuit unit***" (in line 6). There is insufficient antecedent basis for this limitation in the claim.

16. Claim 1 recites the limitation "***a previous stage***" (in line 10). There is insufficient antecedent basis for this limitation in the claim. It would be unclear to one having ordinary skill in the art how "***a previous stage***" can exist without any antecedent basis for "***stages***". "***A previous stage***" before what?

17. Claim 1 recites the limitation "***the differential signal transmitter***" (in line 11). There is insufficient antecedent basis for this limitation in the claim.

18. Claim 1 recites the limitation "***before the differential signal is transmitted from the differential signal transmitter***" (in line 13). There is insufficient antecedent basis for this limitation in the claim.

19. Claim 2 recites the limitation "***providing current***" (in line 3). The lack of a grammatical article (such as "***a***" or "***a plurality of***" or "***the***" or "***said***") preceding the limitation renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation.

20. Claim 2 provides for "***providing current the is required by the differential signal transmitter***" (in line 3), but, since the claim does not set forth any steps involved in the method/process/requirement, it is unclear what method/process/requirement applicant is intending to encompass. A claim is indefinite where it merely recites a requirement without any active, positive steps delimiting how this requirement is actually practiced.

Claim 2 is rejected under 35 U.S.C. 101 because the claimed recitation of a requirement , without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

21. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***a first signal***" (in line 8) and "***a second signal***" (in line 9).

It would be unclear to one having ordinary skill in the art what relationship, if any, is intended to exist between these two limitations and at least the earlier claimed "***data signal***" (in claim 1, line 4) and/or the "***differential signal***" (in claim 1, line 5). How can it be said that "***a first signal***" is being claimed, when at least two "***signals***" have already earlier been claimed?

22. Claim 2 recites the limitation "***ground voltage***" (in line 10). The lack of a grammatical article (such as "***a***" or "***a plurality of***" or "***the***" or "***said***") preceding the limitation renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation.

23. Claim 2 recites the limitation "***the first signal associated with the second signal***" (in line 11). There is insufficient antecedent basis for this limitation in the claim. No "***association***" has been established.

24. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***a signal amplifier***" (in claim 3, line 2) and "***a signal amplifier***" (in claim 1, line 12).

It would be unclear to one having ordinary skill in the art what relationship, if any, is intended to exist between these two limitations. It would be unclear to one having ordinary skill in the art whether a single, identical "***signal amplifier***" is intended to be claimed; or rather whether plural, distinct, different, and independent "***signal amplifiers***" are intended to be claimed.

25. Claim 4 recites the limitation "***the amplifier***" (in line 2). There is insufficient antecedent basis for this limitation in the claim. It would be unclear to one having ordinary skill in the art whether this limitation is intended to refer to "***a signal amplifier***" (in claim 3, line 2) and/or "***a signal amplifier***" (in claim 1, line 12).

26. Claim 4 recites the limitation "***ground voltage***" (in line 5). The lack of a grammatical article (such as "***a***" or "***a plurality of***" or "***the***" or "***said***") preceding the limitation renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation.

27. Claim 4 recites the limitation "***fourth sensor switch***" (in line 8). The lack of a grammatical article (such as "***a***" or "***a plurality of***" or "***the***" or "***said***") preceding the limitation renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation.

28. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***a first signal***" (in line 13) and "***a second signal***" (in line 15).

It would be unclear to one having ordinary skill in the art what relationship, if any, is intended to exist between these two limitations and at least the earlier claimed "***data signal***" (in claim 1, line 4) and/or the "***differential signal***" (in claim 1, line 5). How can it be said that "***a first signal***" is being claimed, when at least two "***signals***" have already earlier been claimed?

29. Claim 4 recites the limitation "***the a first terminal of the second resistor***" (in line 15). There is insufficient antecedent basis for this limitation in the claim.

30. Claim 4 recites the limitation "***the first signal associated with the second signal***" (in line 15). There is insufficient antecedent basis for this limitation in the claim. No "***association***" has been established.

31. Claim 4 recites the limitation "***the differential signal that is amplified***" (in line 16). There is insufficient antecedent basis for this limitation in the claim. It would be unclear to one having ordinary skill in the art whether this "***amplification***" limitation is intended to refer to "***a signal amplifier***" (in claim 3, line 2) and/or "***a signal amplifier***" (in claim 1, line 12).

32. Claim 5 recites the limitation "***if performing amplification***" (in line 1). There is insufficient antecedent basis for this limitation in the claim. It would be unclear to one having ordinary skill in the art whether this "***amplification***" limitation is intended to refer to "***a signal amplifier***" (in claim 3, line 2) and/or "***a signal amplifier***" (in claim 1, line 12).

33. Claim 5 recites the limitation "***if not performing amplification***" (in line 4). There is insufficient antecedent basis for this limitation in the claim. It would be unclear to one having ordinary skill in the art whether this "***amplification***" limitation is intended to refer to "***a signal amplifier***" (in claim 3, line 2) and/or "***a signal amplifier***" (in claim 1, line 12).

34. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***if performing amplification***" (in line 1) and "***if not performing amplification***" (in line 4).

It would be unclear to one having ordinary skill whether or not the claimed invention is intended to be "***performing amplification***".

Earlier claims recite "***a signal amplifier, which converts and amplifies the differential signal***" (in claim 1, line 12) and "***a signal amplifier, which converts and partially amplifies the differential signal***" (in claim 3, line 2). Inferring that amplification is necessarily performed.

However, claim 5 infers that that amplification is not necessarily performed.

35. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

As a courtesy to the Applicant, the examiner has attempted to also make rejections over prior art for at least some of the claims -- based on the examiner's best guess interpretations of the invention that the Applicant is intending to claim.

However, the indefinite nature of the claimed subject matter naturally hinders the Office's ability to search and examine the application.

Any instantly distinguishing features and subject matter that the Applicant considers to be absent from the cited prior art is more than likely a result of the indefinite nature of the claims.

The Applicant is respectfully requested to correct the indefinite nature of the claims, which should going forward result in a more precise search and examination.

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

37. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Pai (US 2004/0075636 A1)*** in view of ***Sunohara (US 2003/0038771 A1)***.

Regarding claim 1, ***Pai*** discloses a cascade liquid crystal display driving circuit (see the entire document, including Page 1, Paragraph 17, Lines 1-2), comprising:

a plurality of driving circuit units [e.g., Fig. 3; 34A & 34B], coupling in cascade fashion, for outputting a data signal [e.g., Fig. 3; S11-S1384 & S21-S2384] to drive a LCD [e.g., Fig. 3; 36];

a plurality of differential transmitters [e.g., Fig. 3; 348A & 348B], for generating a differential signal and transmitting the differential signal to a next stage [e.g., Fig. 3; 34B] of the driving circuit units,

each of the driving circuit units being disposed with one of the differential transmitters; and

a plurality of differential receivers [e.g., Fig. 3; 344A & 344B], for receiving the differential signal from a previous stage [e.g., Fig. 3; 34A] of the driving circuit units,

each of the driving circuit units being disposed with one of the differential receivers (see the entire document, including Pages 1-2, Paragraphs 17-19),

wherein the differential signal transmitter comprises a signal amplifier [e.g., Fig. 3; 346AB], which converts (from digital to analog) and amplifies the differential signal (see the entire document, including Page 2, Paragraph 18, Lines 10-13) after the differential signal is

transmitted from the differential signal transmitter (see the entire document, including Page 2, Paragraph 20).

Pai does not expressly disclose amplifying the differential signal between each stage of the cascaded driving circuit units.

However, ***Sunohara*** discloses converting [e.g., Fig. 7; 32] and amplifying [e.g., Fig. 7; 31] a differential signal [e.g., Fig. 7; d0-dn] between each stage [e.g., Fig. 7; 30] of plural cascaded driving circuit units [e.g., Fig. 8A; 30-1 to 30-6],

wherein the amplification and conversion occurs before the differential signal is transmitted from a differential signal transmitter [e.g., Fig. 7; 32] to the next stage (see the entire document, including Pages 7-8, Paragraph 52).

Pai and ***Sunohara*** are analogous art, because they are from the shared inventive field of cascaded differential signal transmitters and receivers for driving a liquid crystal display panel.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use ***Sunohara's*** differential signal amplification and conversion technique between each stage of ***Pai's*** driving circuit units, so as to stably transmit data with high reliability (see the entire document, including ***Sunohara***: Page 8, Paragraph 54, Lines 8-14).

Regarding claim 3, ***Pai*** discloses the differential signal transmitter comprises a signal amplifier [e.g., Fig. 3; 346AB], which converts (from digital to analog) and partially amplifies the differential signal (see the entire document, including Page 2, Paragraph 18, Lines 10-13)

after the differential signal is transmitted from the differential signal transmitter (see the entire document, including Page 2, Paragraph 20).

Pai does not expressly disclose amplifying the differential signal between each stage of the cascaded driving circuit units.

However, ***Sunohara*** discloses amplifying [e.g., Fig. 7; 31] and converting [e.g., Fig. 7; 32] a differential signal [e.g., Fig. 7; d0-dn] between each stage [e.g., Fig. 7; 30] of plural cascaded driving circuit units [e.g., Fig. 8A; 30-1 to 30-6], wherein the amplification and conversion occurs before the differential signal is transmitted from a differential signal transmitter [e.g., Fig. 7; 32] to the next stage (see the entire document, including Pages 7-8, Paragraph 52).

Pai and ***Sunohara*** are analogous art, because they are from the shared inventive field of cascaded differential signal transmitters and receivers for driving a liquid crystal display panel. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use ***Sunohara's*** differential signal amplification and conversion technique between each stage of ***Pai's*** driving circuit units, so as to stably transmit data with high reliability (see the entire document, including ***Sunohara***: Page 8, Paragraph 54, Lines 8-14).

38. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Pai (US 2004/0075636 A1)*** and ***Sunohara (US 2003/0038771 A1)*** as applied to claim 1 above, and further in view of ***Chow (US 6,836,149 B2)***.

Regarding claim 2, neither ***Pai*** nor ***Sunohara*** expressly discloses manufacturing the differential transmitter with any particular kind of transistor structure.

However, ***Chow*** discloses a differential signal transmitter [e.g., Fig. 4; 400] comprising:

a current source [e.g., Fig. 4; 404], for providing current that is required by the differential signal transmitter; and

a first transistor [e.g., Fig. 4; 406],

a second transistor [e.g., Fig. 4; 408],

a third transistor [e.g., Fig. 4; 410], and

a fourth transistor [e.g., Fig. 4; 412],

wherein a drain of the first transistor and a drain of the second transistor are coupled to the current source,

a source of the first transistor is coupled to a drain of the third transistor where a first signal [e.g., Fig. 4; 416] is drawn,

a source of the second transistor is coupled to a drain of the fourth transistor where a second signal [e.g., Fig. 4; 418] is drawn,

sources of the third and the fourth transistors are coupled [e.g., Fig. 4; 422] to ground voltage [e.g., Fig. 4; gnd], and

the first signal associated with the second signal is the differential signal (see the entire document, including Column 4, Lines 6-24).

Pai and ***Chow*** are analogous art, because they are from the shared inventive field of differential signal transmitters making use of reduced swing differential signaling and mini-low voltage differential signaling (see the entire document, including ***Pai***: Page 2, Paragraph 17, Lines 6-8 and ***Chow***: Column 2, Lines 35-37). ***Pai***, ***Sunohara***, and ***Chow*** are further analogous art, because they are from the shared inventive field of driving liquid crystal display panels.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use ***Chow's*** differential transmitter structure to make ***Pai's*** and ***Sunohara's*** combined differential transmitter within each driving circuit unit, so as to provide a standardized differential data transmission interface and pathway (see the entire document, including ***Chow***: Column 1, Lines 27-38).

39. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Pai (US 2004/0075636 A1)*** and ***Sunohara (US 2003/0038771 A1)*** as applied to claim 3 above, and further in view of ***Matsuura (US 5,619,169 A)***.

Regarding claim 4, neither ***Pai*** nor ***Sunohara*** expressly discloses manufacturing an amplifier with any particular kind of transistor structure.

However, ***Matsuura*** discloses an amplifier [e.g., Fig. 1] comprising:

a first current source [e.g., Fig. 1; 4a] and

a second current source [e.g., Fig. 1; 4b];

a first resistor [e.g., Fig. 1; 3] and

a second resistor [e.g., Fig. 1; 3'],

a second terminal of the first resistor and a second terminal of the second resistor are coupled to ground voltage [e.g., Fig. 1; 5]; and

a first sensor switch [e.g., Fig. 1; 2a],

a second sensor switch [e.g., Fig. 1; 2a'],

a third sensor switch [e.g., Fig. 1; 2b], and

fourth sensor switch [e.g., Fig. 1; 2b'],

a first terminal of the first sensor switch [e.g., Fig. 1; 2a] and a first terminal of the second sensor switch [e.g., Fig. 1; 2a'] are coupled to the first current source [e.g., Fig. 1; 4a],

a first terminal of the third sensor switch [e.g., Fig. 1; 2b] and a first terminal of the fourth sensor switch [e.g., Fig. 1; 2b'] are coupled to the second current source [e.g., Fig. 1; 4b],

a second terminal of the first sensor switch [e.g., Fig. 1; 2a] and a second terminal of the third sensor switch [e.g., Fig. 1; 2b] are coupled to a first terminal of the first resistor [e.g., Fig. 1; 3] where a first signal [e.g., Fig. 1; 6'] is drawn,

a second terminal of the second sensor switch [e.g., Fig. 1; 2a'] and a second terminal of the fourth sensor [e.g., Fig. 1; 2b'] switch are coupled to the a first terminal of the second resistor [e.g., Fig. 1; 3'] where a second signal [e.g., Fig. 1; 6] is drawn,

the first signal associated with the second signal is the differential signal that is amplified (see the entire document, including Column 4, Lines 45-58 and Column 6, Line 53 - Column 7, Line 5).

Pai, ***Sunohara***, and ***Matsuura*** are analogous art, because they are all from the shared inventive field of differential signal processing circuitry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use ***Matsuura's*** differential amplifier structure with ***Sunohara*** and ***Pai's*** combined cascaded differentially-amplified driving circuitry, so as to provide a high speed amplitude variable type differential amplifier capable of having a large and variable range of output amplitude (see the entire document, including ***Matsuura***: Column 3, Lines 46-48).

Regarding claim 5, ***Matsuura*** discloses wherein if performing amplification,

the first sensor switch [e.g., Fig. 1; 2a] and the third sensor switch [e.g., Fig. 1; 2b] are turned on [e.g., Fig. 1; via 1 set at H level],

and the second sensor switch [e.g., Fig. 1; 2a'] and the fourth sensor switch [e.g., Fig. 1; 2b'] are turned off [e.g., Fig. 1; via 1' set at L level], and

if not performing amplification,

the first sensor switch [e.g., Fig. 1; 2a] and the third sensor switch [e.g., Fig. 1; 2b] are turned off [e.g., Fig. 1; via 1 set at L level], and

the second sensor switch [e.g., Fig. 1; 2a'] and the fourth sensor switch [e.g., Fig. 1; 2b'] are turned on [e.g., Fig. 1; via 1' set at H level] (see the entire document, including Column 6, Line 53 - Column 7, Line 5).

Response to Arguments

40. Applicant's arguments filed 11 December 2006 have been fully considered but they are not persuasive.

The Applicant contends, "***Pai*** *fails to teach or suggest '... the differential, signal transmitter comprises a signal amplifier, which converts and amplifies the differential signal before the differential signal is transmitted from the differential signal transmitter..' as recited in claim 1*" (see Page 10 of the Response filed 11 December 2006).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The Applicant contends, "*As found in paragraph [0021] of* ***Sunohara****, it is interpreted that '[a] CMADS receiver for receiving a signal of a CMADS amplitude via each of the internal CMADS bus lines and amplifying the signal to provide the amplified signal to a serial-parallel conversion circuit .....' The technique of the* ***Sunohara*** *is that a CMADS receiver amplifies the signal after receiving the signal. Apparently, the invention amplifies the signal before the transmission. On the other hand,* ***Sunohara*** *amplifies the signal after the transmission. Therefore, the Claim 3 is patentable over Pal and* ***Sunohara*** *as applied to claim above, and*

Further in view of ***Matsuura***" (see Page 11 of the Response filed 11 December 2006). However, the examiner respectfully disagrees.

Sunohara discloses amplifying [Fig. 7; 31] and converting [Fig. 7; 32] a differential signal [Fig. 7; d0-dn] between each stage [Fig. 7; 30] of plural cascaded driving circuit units [Fig. 8A; 30-1 to 30-6], wherein the amplification and conversion occurs before the differential signal is transmitted from a differential signal transmitter [Fig. 7; 32] to the next stage (see Pages 7-8, Paragraph 52).

The Applicant contends, "*An embodiment of the claim 4 is described in the Fig 8 in the invention. The corresponding embodiment of the* ***Matsuura*** *is described in the Fig 1 of the* ***Matsuura***. *Referring to the Fig 1 of the* ***Matsuura*** *and the Fig 8 of the invention, the mechanism of transistors 2a, 2a', 2b, 2b' of* ***Matsuura*** *is different from the mechanism of switches 830, 840, 850, 860. In the invention, the switches 830, 840, 850, 860 are under the scope of the digital circuit. Therefore, the digital switches 830, 840, 850, 860 select the states of the 'turn on' and 'turn off' separately. However, the variations of the currents flowing though the transistors 2a, 2a', 2b, 2b' described in Fig 3A and Fig 3B are to prove that the transistors 2a, 2a', 2b, 2b' are under the scope of the analog circuit. The mechanism of the analog circuit is different from the digital circuit. As a result, the Claim 4 is patentable over Pal and* ***Sunohara*** *as applied to claim above, and further in view* ***Matsuura*** " (see Pages 11-12 of the Response filed 11 December 2006).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *digital switches/circuitry versus analog switches/circuitry*) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

41. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (***PAI***R) system. Status information for published applications may be obtained from either Private ***PAI***R or Public ***PAI***R. Status information for unpublished applications is available through Private ***PAI***R only. For more information about the ***PAI***R system, see http://***Pai***r-direct.uspto.gov. Should you have questions on access to the Private ***PAI***R system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/
Primary Examiner, Art Unit 2629
1 July 2008